

Gulf Coast Aerosol Research and Characterization Program (Houston Supersite)

PROGRESS REPORT

EPA Contract No. R-82806201
between the Environmental Protection Agency and the
University of Texas at Austin

Submitted by:

Dr. David Allen
(allen@che.utexas.edu)
512-471-0049

Center for Energy and Environmental Resources
The University of Texas at Austin
10100 Burnet Road, Bldg. 133
Austin, Texas 79758

May, 2000

Date of Report: May 9, 2000

EPA Agreement No.: R-82806201

Title: Gulf Coast Aerosol Research and Characterization Study

Investigators: Dr. David Allen (PI) and Dr. Matthew Fraser (Co-PI)

Institutions: University of Texas and Rice University

Research Category: Air Quality/Fine Particulate Matter

Project Period: 01/15/00-11/30/03

Objective of Research: Characterize fine particulate matter and fine particulate matter formation processes in Southeast Texas

Progress Summary/Accomplishments:

During the first four months of funding, substantial progress has been made in three aspects of the Houston Supersite program:

1. *Program Management activities* The Program management positions have been filled. Subcontracting has been initiated with all of the collaborators cited in the original proposal. Plans for Supersite sampling and data management have been coordinated with the sampling and data management plans for a parallel study of ozone formation in Texas (the Texas Air Quality Study or TexAQS-2000). A preliminary Supersite website has been established as part of the TexAQS web page (www.utexas.edu/research/ceer/texaqs/).
2. *Quality Assurance and Data Management activities* The Quality Assurance Project Plan has been submitted for review. Standard Operating Procedure (SOP) documents have been prepared. Based on discussions with NARSTO, the EPA and data management coordinators at the other Supersites, preliminary data formatting protocols have been defined.
3. *Site Logistics* Supersite sampling will be conducted at three locations. Formal permissions to expand and use each of these sites are being finalized. Arrangements have been made for adding power and phone lines. Investigator power and communication requirements have been surveyed and site plot plans have been drafted.

More detailed lists of accomplishments in each of these areas are attached.

Based on these accomplishments, we anticipate deployment of sampling equipment approximately August 1, 2000, and collection of valid data within 1 to 2 weeks of equipment deployment. The most critical task over the next 3 months is to prepare the physical infrastructure at the sites – this task is on schedule and we currently anticipate that the sites will be ready by mid-July. Another important goal will be to transmit NARSTO approved data formatting protocols to individual investigators so that each investigator can define their data formats before the study begins.

Program Management Activities

1. Program management positions have been filled. Vincent Torres of the University of Texas (vmtorres@mail.utexas.edu) is the Houston Supersite Program Manager. He is managing all site logistics. Dr. Elena McDonald-Buller (ecmb@mail.utexas.edu) is the Data Management Coordinator. She is overseeing the development of the Quality Assurance Project Plan, and all the data formatting protocols. As the data are submitted, she will be responsible for creating the data archive. Vickie Amidon (vamidon@mail.utexas.edu) is the lead administrator for the Supersite program. She is managing all contracting, subcontracting and accounting for the program.
2. Subcontracting has been initiated with all of the collaborators cited in the original proposal. EPA Contract No. R-82806201 has seven Sub-contractors: (1) Aerosol Dynamics; (2) Clarkson University; (3) University of Delaware; (4) Georgia Tech; (5) Rice University; (6) Texas A&M; (7) Texas Tech. Subcontract paperwork was initiated by the University of Texas and sent to each Subcontractor for review and signature. Executed copies of subcontracts have been received from each subcontractor except for Aerosol Dynamics and Georgia Tech. Approval of these final two contracts is expected shortly.
3. Plans for Supersite sampling and data management have been coordinated with the sampling and data management plans for a parallel study of ozone formation in Texas (the Texas Air Quality Study or TexAQS-2000). For the past 2 months, weekly conference calls have been held involving the Houston Supersite PI and co-PI (David Allen and Matt Fraser), and the lead TexAQS investigators (Peter Daum of Brookhaven; Jim Meagher, Eric Williams and Fred Fehsenfeld of NOAA; Jim Price of the TNRCC). A 2-day Science Team meeting, involving virtually all TexAQS and Supersite investigators (approximately 100 individuals), was held in Houston in April.
4. A preliminary Supersite website has been established as part of the TexAQS web page (www.utexas.edu/research/ceer/texaqs/). This website has just been established but over the next several months will evolve into the primary communication vehicle for the study. The Texas Natural Resource Conservation Commission has provided the University of Texas funding to hire a part-time programmer dedicated to the development of this site.

Quality Assurance and Data Management activities

1. The Quality Assurance Project Plan (QAPP) for the Houston Supersite has been submitted to Dennis Mikel and Jeffrey West of the Environmental Protection Agency. The QAPP was developed according to a checklist provided by Dennis Mikel. The QAPP is currently under review by the EPA. The Principal Investigator, David Allen, will respond to comments and recommended modifications as they are received from the EPA
2. Standard Operating Procedures (SOPs) from all members of the Houston Supersite Science Team have been received by the University of Texas at Austin and are currently under internal review. Upon completion of the review, the SOPs will be released to John Watson of the Desert Research Institute (DRI) for inclusion in the Supersite SOP database. The SOPs from the Houston Supersite will then be available to be used as references by other Supersites.
3. Based on discussions with NARSTO, the EPA and data management coordinators at the other Supersites, preliminary data formatting protocols have been defined. Elena McDonald-Buller, the Data Management Coordinator for the Houston Supersite, and Sigurd Christensen of the NARSTO Quality Systems Science Center have begun weekly conference calls with the Supersite Data Management Coordinators to discuss issues regarding data management and submission of data to the Permanent Data Archive (PDA). While the NARSTO Data Management Handbook is relatively comprehensive, the unique measurements and gaps in existing recommendations related to specific types of Supersite data have motivated the review of these topic areas. The calls have primarily focused on four areas: (1) variable names and formatting, (2) site naming conventions, (3) flags, and (4) access and submission requirements. A brief summary of topics related to each of the four issues is given below. Data validation, as it relates to data management, and integration of data with other field studies (TexAQS) have also been discussed in the conference calls. These calls are on-going and have included Mike Jones and Jeffrey West from the EPA and Bill Sukloff from Environment Canada. The Houston Supersite will adopt recommended conventions from NARSTO and the EPA.

Variable Names and Formatting:

- Root variable names
- Naming conventions for organics
- Inclusion of a method code in the variable name
- Data format conventions
- Length of fields

Site Naming Conventions:

- Short naming conventions (4 character) for PDA
- Long naming conventions

Flags:

- Project-level flags
- Investigator-level flags

Access and Submission Requirements:

- Requirements for public access
- Web-based access
- Data flow

All members of the Houston Supersite Science Team received a form from Elena McDonald-Buller and David Allen requesting information on the format of data they will be submitting to the Houston Supersite data archive. The investigators are in the process of responding, and their information will be used to guide the development of the database.

Databases from California Air Resources Board, the Desert Research Institute, Environment Canada, and the Southern Oxidant Study Atlanta Campaign, are being reviewed as references.

The Data Management Coordinator is also working with Information Technology and Data Mining experts from The University of Texas at Austin's Applied Research Laboratory on database systems and operational architectures.

Site Logistics

Supersite sampling will be conducted at three locations. Formal permissions to expand and use each of these sites are being finalized. Arrangements have been made for adding power and phone lines. Investigator power and communication requirements have been surveyed and site plot plans have been drafted. The status of each of the sites is given below.

1. Aldine: The Aldine Supersite location will be an expansion of a Texas Natural Resource Conservation Commission site located on Aldine Independent School District grounds. The Aldine Independent School District has been contacted and a request has been submitted to expand the site to accommodate the additional monitoring equipment trailers and other equipment that will be used by the Supersite project. Concept drawings of the proposed modifications to the site have been approved by the Texas Natural Resource Conservation Commission. Contractors are being identified so that site modifications can commence soon after approval is received to expand the site.
2. Deer Park: The Deer Park Supersite location will be an expansion of a Texas Natural Resource Conservation Commission site located at a park owned by the City of Deer Park. The City of Deer Park has been contacted and a request has been submitted to expand the site to accommodate the additional monitoring equipment trailers and other equipment that will be used by the Supersite project. Concept drawings of the proposed modifications to the site have been approved by the TNRCC. Contractors are being identified so that site modifications can commence soon after approval is received to expand the site.
3. HRM 3: The HRM 3 Supersite location will be an expansion of a Houston Regional Monitoring (HRM) Network site. HRM is a network of sampling sites funded by local industry; data from these well-instrumented sites collected during the Supersite program will be made public. The HRM 3 site is located on land managed by the Houston Port Authority. Approval has just been received from the Houston Port Authority to expand the site. Contractors are being contacted to begin site modifications. Additional samplers, beyond those described in the Supersite proposal, have been added to HRM 3. Suzanne Herring of Aerosol Dynamics has agreed to bring a continuous sulfate monitor to this site in August. This monitor will complement identical instruments to be deployed at Aldine and Deer Park. Funding for this monitor has been provided by HRM. In addition, a request has been submitted to the TNRCC to provide an NOy monitor for HRM 3. Approval of this request is pending.